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AN EVALUATION OF RODENT PROBLEMS IN THE FLAT SALE, BIG BEAR RANGER DISTRICT, SAN BERNARDINO NATIONAL FOREST

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ABSTRACT

Western gray squirrels are causing significant damage to Jeffrey pine saplings in the Flat Sale on the Big Bear Ranger District. Squirrel-management alternatives that can be integrated with the silvicultural prescription are presented. It is unlikely that resource management objectives will be obtained without some control effort. Temporary population reduction combined with silvicultural treatments should provide sufficient protection for trees to grow out of the susceptible size class.

INTRODUCTION

The Flat Sale, Green Canyon Compartment, was examined on December 14, 1981, by Chuck Robinson, District Forestry Technician, Jim Bridges, Forest Silviculturist, and John Borrecco, Animal Damage Specialist, Regional Office. Management objectives are to improve the health and vigor of the stand, and the silvicultural prescription calls for thinning the stand back to a basal area of about 120 square feet per acre. Thinning will remove suppressed, diseased (Elytroderma deformans) and some codominant trees. Mountain-mahogany will be removed where practical and economical, and black oak will be left. Gray squirrels have caused considerable barking injuries to Jeffrey pine in the intermediate size class. A major question is whether or not squirrel-damaged trees should be removed. The objectives of this evaluation were to examine the damage by western gray squirrels and to suggest feasible alternatives that could be integrated into the silvicultural prescription.

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OBSERVATIONS

The Flat Sale stand is primarily a Jeffrey pine sapling stand with a mature Jeffrey pine overstory. The mid-level composition is Jeffrey pine (70%) and some pinyon pine-juniper (30%). The understory or ground-level cover is light (15%) and mainly ceanothus and young pine and juniper.

A prior examination of this stand indicated that about 50 percent of the Jeffrey pine in the intermediate size class had sustained barking injuries from gray squirrels. Dead-topped and multiple-topped trees as a result of these injuries were abundant, and clipped and peeled twigs were found at the bases of several trees. It appears that these younger, thinner-barked trees are most susceptible to squirrel barking.

BIOLOGY OF VERTEBRATE PESTS

WESTERN GRAY SQUIRREL (Sciurus griseus)

Preferred habitats of the western gray squirrel are the fairly open oak woodlands and pine-oak forests. This squirrel is primarily an acorn eater but supplements the diet with conifer seeds, nuts, mushrooms, and tender shoots and bark of trees. Gray squirrels are diurnal and most activity occurs during the early morning. Although principally arboreal, they may spend considerable time foraging on the ground. They do not hibernate and are active year round except during inclement or very cold weather when they remain in their nests. The western gray squirrel nests in tree cavities or in nests made of twigs and shredded bark. Nests are usually located 20 feet or more above ground. Home ranges are 1/2 to 2 acres and population levels seldom exceed 2 squirrels per acre. Young are born between February and June after a gestation period of about 44 days. Only one litter of 3 to 5 young is produced each year. Young squirrels remain in the nest at least 6 weeks. Squirrels are most susceptible to predators when on the ground. The western gray squirrel is classified as a game animal.

MANAGEMENT OPTIONS

Little information is available regarding gray squirrel damage to conifers or gray squirrel responses to silvicultural and control activities. The susceptible trees or at least the ones recently damaged were the younger, thinner-barked ones. The larger trees did not appear to have been damaged recently, although evidence of old injuries was apparent. The assumption presented is that given temporary protection, trees will grow to a less susceptible size. However, another possibility is that damage may simply occur higher on the bole of older trees. Based on experience with other vertebrate species that do similar types of damage, it is unlikely that leaving damaged trees will reduce future injuries to undamaged trees.

1. No Action. Gray squirrels will continue to cause barking injuries resulting in dead tops or multiple-topped trees. It is unlikely that silvicultural objectives for this stand would be obtainable.

2. Thinning. The silvicultural prescription calls for thinning the stand back to a basal area of about 120 square feet per acre. This could remove many of the damaged and poorly formed trees. A more open stand would reduce the amount of crown-to-crown movement and would require the squirrels to spend more time foraging on the ground. This could increase their susceptability to predation. However, feeding and nest building activity would probably result in damage to the remaining trees. Opening the stand might encourage some understory vegetation that would provide an alternate food source; however, any benefits would be short-lived.

3. Direct Control. Gray squirrels are classified as game animals and can be taken only as provided by the hunting regulations or under authority of a depredation permit obtained from the Department of Fish and Game. Since there is not currently a hunting season for gray squirrels in southern California, a depredation permit must be obtained. No poison may be used. Shooting and trapping have proven effective methods of control in southwest Oregon.

Trapping requires skill, experience and considerable time in baiting, setting and checking traps. This approach is practical only where a few squirrels need to be removed. Shooting, using a .22 rifle, pistol or a shot gun is recommended as the most practical and efficient method of population reduction. Shooting would probably be most effective if done early in the year before young are born or during the fall after young have dispersed.

4. Indirect Control. Other ideas often suggested for reducing damage are destruction of nests and encouragement of other vegetation like oak that is a preferred food source. The efffectiveness of these measures is unknown. Nest destruction when combined with direct control should help reduce the potential for reinvasion by animals outside the area. Oaks are to be protected and encouraged in the silvicultural prescription. Whether or not this will have any long-term benefits in preventing damage remains to be seen.

5. Integrated Treatments. Management alternatives 2, 3 and 4 can be combined within the silvicultural prescription to provide effective control and meet management objectives.